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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KJELIN, ERIK J

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 05/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,075

Applicant(s)

SHUTO ET AL.

Examiner

Erik Kielin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,9,10 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) 14-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,9 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 April 2004 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claim 9 is indefinite because it recites, in line 9, that the alignment state is fixed and then in lines 11 and 12 indicates, again, that "optical irradiation to the liquid crystalline composition to fix the liquid crystalline composition." As presently written, it is unclear how the alignment is fixed.

Claim 10 is rejected for depending from the above rejected claim 9.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,620,781 (**Akashi et al.**).

Regarding claim 1, **Akashi** discloses a method for manufacturing a homeotropic alignment liquid crystal film comprising the steps of

coating a side chain type liquid crystal polymer comprising a monomer unit (a) containing a liquid crystalline fragment side chain and a monomer (e.g. formulas (I), (III), (IV); Abstract) unit (b) containing a non-liquid crystalline fragment side chain (e.g. formula (II); Abstract) on a substrate on which a vertical alignment film is **not** formed (col. 30, lines 52-53; Figs. 5 and 6), said liquid crystal polymer being capable of homeotropic alignment by heating (paragraph bridging cols. 30-31);

after the substrate is coated with the liquid crystal polymer which is in a liquid crystal state, homeotropically aligning the liquid crystal polymer by heating (paragraph bridging cols. 30-31); and

fixing a resulting homeotropic alignment state of the liquid crystal polymer (paragraph bridging cols. 30-31).

(See also Examples in cols. 31-36; cols. 2-3 and 5-27 for the classes of polymers.)

Regarding claim 2, **Akashi** discloses the method for manufacturing a homeotropic alignment liquid crystal film according to claim 1, wherein a material of said substrate is polymer or glass (col. 28, lines 58-65).

Regarding claim 9, **Akashi** discloses a method for manufacturing a homeotropic alignment liquid crystal film comprising,

coating a side chain type liquid crystal polymer comprising a monomer unit (a) containing a liquid crystalline fragment side chain and a monomer (e.g. formulas (I), (III), (IV); Abstract) unit (b) containing a non-liquid crystalline fragment side chain (e.g. formula (II); Abstract) on a substrate on which a vertical alignment film is **not** formed (col. 30, lines 52-53; Figs. 5 and 6), said liquid crystal polymer being capable of homeotropic alignment by heating (paragraph bridging cols. 30-31);

coating a liquid crystalline composition on a substrate on which a vertical alignment layer film is not formed (col. 30, lines 52-53; Figs. 5 and 6), said liquid crystal composition being capable of homeotropic alignment by heating and comprising a side-chain-type liquid crystal polymer and a photopolymerizable polymer liquid crystal compound (Abstract; cols. 2-3 and 5-27; paragraph bridging cols. 30-31);

after the substrate is coated with the liquid crystal polymer which is in a liquid crystal state, homeotropically aligning the liquid crystal polymer by heating (paragraph bridging cols. 30-31); and

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fixing a resulting homeotropic alignment state of the liquid crystal composition (paragraph bridging cols. 30-31); and

applying optical irradiation to the liquid crystal composition to fix the liquid crystalline composition (col. 29, lines 42-43; paragraph bridging cols. 30-31).

(See also Examples in cols. 31-36; cols. 2-3 and 5-27 for the classes of polymers.)

Regarding claim 10, **Akashi** discloses the method for manufacturing a homeotropic alignment liquid crystal film according to claim 9, wherein a material of the substrate is polymer substance or glass (col. 28, lines 58-65).

6. Claims 1, 2, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,730,900 (**Kawata**).

Regarding claim 1, **Kawata** discloses a method for manufacturing a homeotropic alignment liquid crystal film comprising the steps of

coating a side chain type liquid crystal polymer comprising a monomer unit (a) containing a liquid crystalline fragment side chain and a monomer unit (b) containing a non-liquid crystalline fragment side chain on a substrate on which a vertical alignment film is not formed (col. 4, lines 57-59), said liquid crystal polymer being capable of homeotropic alignment by heating (col. 2, lines 55-62; col. 31, line 64 to col. 33, line 3);

after the substrate is coated with the liquid crystal polymer which is in a liquid crystal state, homeotropically aligning the liquid crystal polymer by heating; and

fixing a resulting homeotropic alignment state of the liquid crystal polymer.

(See also col. 4, lines 22-30; col. 16, lines 57-64; and col. 34, lines 28-45.)

Regarding claim 2, **Kawata** discloses the method for manufacturing a homeotropic alignment liquid crystal film according to claim 1, wherein a material of said substrate is polymer or glass (col. 39, lines 30-36).

Regarding claim 9, **Kawata** discloses a method for manufacturing a homeotropic alignment liquid crystal film comprising,

coating a liquid crystalline composition on a substrate on which a vertical alignment layer film is not formed (col. 4, lines 57-59), said liquid crystal composition being capable of homeotropic alignment by heating and comprising a side-chain-type liquid crystal polymer and a photopolymerizable polymer liquid crystal compound (col. 2, lines 55-62; col. 31, line 64 to col. 33, line 3);

after the substrate is coated with the liquid crystal polymer which is in a liquid crystal state, homeotropically aligning the liquid crystal polymer by heating; and

fixing a resulting homeotropic alignment state of the liquid crystal composition; and
applying optical irradiation to the liquid crystal composition to fix the liquid crystalline composition.

(See also col. 4, lines 22-30; col. 16, lines 57-64; and col. 34, lines 28-45.)

Regarding claim 10, **Kawata** discloses the method for manufacturing a homeotropic alignment liquid crystal film according to claim 9, wherein a material of the substrate is polymer substance or glass (col. 39, lines 30-36).

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7. Claims 1, 2, 9, and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,379,758 B1 (**Hanmer** et al.).

Regarding claim 1, **Hanmer** discloses a method for manufacturing a homeotropic alignment liquid crystal film comprising the steps of

coating a side chain type liquid crystal polymer comprising a monomer unit (a) containing a liquid crystalline fragment side chain and a monomer unit (b) containing a non-liquid crystalline fragment side chain on a substrate on which a vertical alignment film is not formed (col. 15, lines 28-30), said liquid crystal polymer being capable of homeotropic alignment by heating;

after the substrate is coated with the liquid crystal polymer which is in a liquid crystal state, homeotropically aligning the liquid crystal polymer by heating; and

fixing a resulting homeotropic alignment state of the liquid crystal polymer.

(See col. 3, lines 50-65; col. 4, lines 15-25 and lines 41-67; paragraph bridging cols. 5-6; and especially the example entitled "EXAMPLE 1A" beginning at col. 14.)

Regarding claim 2, **Hanmer** discloses the method for manufacturing a homeotropic alignment liquid crystal film according to claim 1, wherein a material of said substrate is polymer or glass (col. 4, lines 60-61; col. 15, lines 28-30).

Regarding claim 9, **Hanmer** discloses a method for manufacturing a homeotropic alignment liquid crystal film comprising,

coating a liquid crystalline composition on a substrate on which a vertical alignment layer film is not formed (col. 15, lines 28-30), said liquid crystal composition being capable of

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homeotropic alignment by heating and comprising a side-chain-type liquid crystal polymer and a photopolymerizable polymer liquid crystal compound;

after the substrate is coated with the liquid crystal polymer which is in a liquid crystal state, homeotropically aligning the liquid crystal polymer by heating; and

fixing a resulting homeotropic alignment state of the liquid crystal composition; and

applying optical irradiation to the liquid crystal composition to fix the liquid crystalline composition.

(See col. 3, lines 50-65; col. 4, lines 15-25 and lines 41-67; paragraph bridging cols. 5-6; and especially the example entitled "EXAMPLE 1A" beginning at col. 14.)

Regarding claim 10, **Hanmer** discloses the method for manufacturing a homeotropic alignment liquid crystal film according to claim 9, wherein a material of the substrate is polymer substance or glass (col. 4, lines 60-61; col. 39, lines 30-36).

Response to Arguments

8. Applicant's arguments filed 12 April 2004 have been fully considered but they are not persuasive.

Regarding the **Kawata** reference, Applicant argues that "discotic polymers are not capable of homeotropic alignment." (Emphasis added; see "REMARKS" on p. 2.) Examiner respectfully disagrees. Applicant's argument is based on an inaccurate and conclusory observation. It has been **long known** that discotic liquid crystals are capable of homeotropic alignment. See, for example, the article **Bartolino et al.** "Uniaxial and biaxial lyotropic nematic liquid crystals" *Physical Review A* 26(2) **August 1982**, pp. 1116-1119, at p. 1118, right-hand

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column, which states that discotic liquid crystals are homeotropically aligned. See also the **Hanmer** reference at col. 4, lines 15-25 and at col. 15, lines 35-39. Accordingly, Applicant's argument is not persuasive because it is based on false information.

Applicant appears to argue that **Hanmer** fails to teach applying a polymer to the substrate, but instead applies a monomer and then polymerizes it. Examiner points out that there exists no limitation in the instant claims requiring the liquid crystal polymer to be a polymer before applying it to the substrate. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Accordingly, the argument is not persuasive.

Moreover, assuming, *arguendo*, that the instant claims were somehow limited to forming the polymer prior to applying it to the substrate, it has been held that the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). There exists no evidence of record indicating unexpected results for polymerizing the liquid crystal material before applying it to the substrate versus applying a solution and then polymerizing it. There is nothing in the instant specification comparing the method of Hanmer to that of the instant claims.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 571-272-1693. The examiner can normally be reached on 9:00 - 19:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Erik Kielin
Primary Examiner
19 May 2004